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09/652,150	08/31/2000	Kazuhiro Hoshino	SON-1894	2607

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EXAMINER	
HERNANDEZ, NELSON D	

ART UNIT	PAPER NUMBER
2622	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/652,150	HOSHINO ET AL.	
	Examiner	Art Unit	
	Nelson D. Hernandez	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 May 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *12,13 and 15-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12,13 and 15-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Response to Amendment

2. The Examiner acknowledges the amended claims filed on May 11, 2007. Claims 12 and 25-27 have been amended. Claims 1-11 and 14 have been canceled.

Response to Arguments

3. Applicant's arguments, see pages 7-11, filed May 11, 2007, with respect to the rejection(s) of claim(s) 12-13 and 21-29 under 35 USC § 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 12, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al., US Patent 5,130,804 in view of Stern et al., US Patent 6,147,389 and further in view of Kawabe et al., JP 7-212633.

Regarding claim 12, Tamura et al. discloses an optical system having an optical module (See fig. 5), the optical module comprising: a substrate (See fig. 5), the substrate including a plate (The examiner is reading the protrusion 48 shown in fig. 6 as the plate; said protrusion 48 is used to accurately position the CCD 17) of a first material (the plate being of a first material is inherently disclosed in Tamura et al. since it is expected to have the plate of a particular material) adhered to a wiring board (Fig. 5: B), a through-hole extending through the plate and the wiring board (See fig. 5); an optical element (CCD 17 as shown in fig. 5) mounted to the wiring board, the optical element including a light receiving portion; and a lens unit (Fig. 5: 18) mounted to the substrate, the lens unit including a lens (Fig. 5: 39), wherein the light receiving portion and the lens are disposed along an optical axis, the optical axis extending through the through-hole (See fig. 5) (Col. 4, line 43 – col. 5, line 54).

Although Tamura et al. discloses the plate being between the optical element and the substrate and the substrate between the plate and the lens unit, Tamura et al.

does not explicitly disclose the wiring board being of a material different form the material of the plate, the wiring board being between the optical element and the plate, that said lens is mounted to the plate, the plate being between the wiring board and the lens unit; and that first material is a metal.

However, Stern et al. teaches an optical system having an optical module (See fig. 7A), the optical module comprising: a substrate (See fig. 7A), the substrate including a plate (Fig. 7A: 701) of a first material (the plate being of a first material is inherently disclosed in Stern et al. since it is expected to have the plate of a particular material) adhered to a wiring board (frame 310 as shown in fig. 7A, which is also electrically connected to a substrate 710, frame 310 acts as a wiring board by supplying electrical connection between the optical element 306 and the substrate 710), a through-hole extending through the plate and the wiring board (See fig. 7A); an optical element (Fig. 7A: 306) mounted to the wiring board, the optical element including a light receiving portion, the wiring board (310) being between the optical element (306) and the plate (701) (See fig. 7A); and a lens unit (Stern et al. teaches a window 302 mounted to the plate but also teaches that a lens can be mounted to the plate; col. 4, lines 36-55) mounted to the plate, the plate being between the wiring board and the lens unit (See fig. 7A), wherein the light receiving portion and the lens are disposed along an optical axis, the optical axis extending through the through-hole (See fig. 7A) (Col. 3, line 60 – col. 4, line 67; col. 6, lines 5-28).

Therefore, taking the combined teaching of Tamura et al. in view of Stern et al. as a whole, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify Tamura et al. by having the wiring board being between the optical element and the plate, that said lens is mounted to the plate and the plate being between the wiring board. The motivation to do so would have been to provide the optical module with a reference plane, said reference plane of the optical module being aligned with respect to an image plane of the sensor such that the sensor can be mounted in an optical assembly quickly, easily, accurately, and inexpensively as suggested by Stern et al. (Col. 1, lines 35-43).

The combined teaching of Tamura et al. in view of Stern et al. fails to teach that the wiring board being of a material different form the material of the plate and that the material of the plate is metal.

However, Kawabe et al. teaches an optical system having an optical module (See fig. 1), the optical module comprising: a substrate the substrate including a plate (Fig. 1: 3) of a first material (metal) adhered to a wiring board (Fig. 1: 2), of a material other than the first material, an optical element (CCD 1 as shown in fig. 1) mounted to the wiring board (through the metal plate), the optical element including a light receiving portion; and a lens unit (Fig. 1: 4) mounted to the plate, the lens unit including a lens (Fig. 1: 5), the plate being between the wiring board and the lens unit, wherein the light receiving portion and the lens are disposed along an optical axis, the optical axis extending through a through-hole (See fig. 1) (See Machine Translation page 3, ¶ 0007-0011; see also page 2, ¶ 0003-0006).

Therefore, taking the combined teaching of Tamura et al. in view of Stern et al. and further in view of Kawabe et al. as a whole, it would have been obvious to one of

ordinary skill in the art at the time the invention was made to modify the material of the plate in Tamura et al. and Stern et al. by having a metal plate. The motivation to do so would have been to protect the substrate from any fissure or crack from occurrence to the optical system due to heat generated by the optical unit as suggested by Kawabe et al. (Machine Translation, page 2, ¶ 0006 and page 3, ¶ 0007; see also page 2, ¶ 0003).

Regarding claim 19, claim 19 is discussed and analyzed with respect to claim 12. The combined teaching of Tamura et al. in view of Stern et al. and further in view of Kawabe et al. teaches the optical system applied to an imaging device (See Tamura et al., video camera 1 as shown in fig. 1; see also Stern et al., col. 3, lines 37-45; Kawabe et al., Machine Translation, page 2, ¶ 0001). Grounds for rejecting claim 12 apply here.

Regarding claim 20, limitations can be found in claim 19.

6. Claims 13 rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al., US Patent 5,130,804 in view of Stern et al., US Patent 6,147,389 and further in view of Kawabe et al., JP 7-212633 and further in view of Campbell, US Patent 7,133,076 B1.

Regarding claim 13, the combined teaching of Tamura et al. in view of Stern et al. and further in view of Kawabe et al. teaches that the lens is mounted to a lens barrel (See Tamura et al., fig. 5: 37; see also Kawabe et al., Fig. 1: 4) but fails to teach the lens barrel being moveable in a direction along the optical axis.

However, Campbell teaches the use of a lens barrel in an imaging module, wherein the lens barrel is extended in a direction along the optical axis with the purpose

of performing focusing or to remove the optics (See figs. 2A and 2B; col. 2, line 62 – col. 3, line 46; col. 4, lines 10-58).

Therefore, taking the combined teaching of Tamura et al. and Stern et al. in view of Kawabe et al. and further in view of Campbell as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tamura et al., Stern et al. and Kawabe et al. by having a lens barrel moveable along the optical axis. The motivation to do so would have been to increase the efficiency of the optical system by allowing adjustment of focusing or to remove the optics as suggested by Campbell (Col. 2, line 62 – col. 3, line 46; col. 4, lines 10-58).

7. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al., US Patent 5,130,804 in view of Stern et al., US Patent 6,147,389 and further in view of Kawabe et al., JP 7-212633 and further in view of Mochizuki, US Patent 5,777,335.

Regarding claim 15, the combined teaching of Tamura et al. in view of Stern et al. and further in view of Kawabe et al. fails to teach that the optical element includes a shielding layer, the light-receiving portion being between the shielding layer and the lens.

However, Mochizuki discloses a solid photographing apparatus (See figs. 2 and 9), comprising: a photographic element (Fig. 2: 1) having an upper face with a light receiving portion and an opposing lower face; a circuit board (Fig. 1: 7) having a circuit board upper face and a circuit board lower face; said circuit board upper face defines a

recessed portion having an inner surface with a light blocking shield (Fig. 2: 30(5)) disposed thereon (See fig. 2, the wiring 11 forms the recessed portion of the circuit board); and said photographing element being mounted in said recessed portion with said lower face being shielded from light passing through said circuit board lower face by said light blocking shield and said photographing element being electrically connected to said circuit board (using wiring shown in fig. 2: 11) (Col. 3, lines 21-51; col. 4, lines 25-40). Having a shielding layer is advantageous because it would help preventing external scattering of radiation to the unwanted locations and the scattering of radiation outside the apparatus, and also, the generation of noises derived from such scattering.

Therefore, taking the combined teaching of Tamura et al. and Stern et al. in view of Kawabe et al. and further in view of Mochizuki as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical system by having a shielding layer, the light receiving portion being between the shielding layer and the lens. The motivation to do so would have been to improve the optical system efficiency by preventing external scattering of radiation to the unwanted locations and the scattering of radiation outside the apparatus, and also, the generation of noises derived from such scattering as suggested by Mochizuki (Col. 2, lines 6-10; col. 3, lines 40-47).

Regarding claim 16, the combined teaching of Tamura et al. and Stern et al. in view of Kawabe et al. and further in view of Mochizuki as applied to claim 15 teaches

that the shielding layer is a metal layer (See Mochizuki, col. 4, lines 25-40; col. 5, lines 19-23).

8. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al., US Patent 5,130,804, Stern et al., US Patent 6,147,389 and Kawabe et al., JP 7-212633 in view of Mochizuki, US Patent 5,777,335 and further in view of Fujieda, US Patent 6,011,860.

Regarding claim 17, the combined teaching of Tamura et al. and Stern et al. in view of Kawabe et al. and further in view of Mochizuki fails to teach that the shielding layer is a resin layer.

However, Fujieda teaches that the use resin for the shielding layer (Fig. 3: 21, note that the hole casing is made with resin for blocking light) is notoriously well known in the art as an alternative for preventing light or radiation to reach the light receiving portion (Fig. 3: 26) (Col. 5, lines 19-40).

Therefore, taking the combined teaching of Tamura et al., Stern et al. and Kawabe et al. in view of Mochizuki and further in view of Fujieda as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical system by having a shielding layer made with resin. The motivation to do so would have been to improve the optical system efficiency by preventing external scattering of light to the unwanted locations and the scattering of light outside the apparatus, and also, the generation of noises derived from such scattering using a material different from metal as a matter of design choice.

Regarding claim 18, the combined teaching of Tamura et al., Stern et al. and Kawabe et al. in view of Mochizuki and further in view of Fujieda as applied to claim 17 teaches that a portion of the resin layer is in contact with the wiring board (See Mochizuki, figs. 1 and 2, the shielding layer 5 is in contact with the substrate 3).

9. Claims 21, 23, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al., US Patent 5,130,804 and Stern et al., US Patent 6,147,389 in view of Kawabe et al., JP 7-212633 and further in view of Beaman, US Patent 5,821,532.

Regarding claim 21, Tamura et al. discloses an optical system having an optical module (See fig. 5), the optical module comprising: a substrate (See fig. 5), the substrate including a plate (The examiner is reading the protrusion 48 shown in fig. 6 as the plate; said protrusion 48 is used to accurately position the CCD 17) of a first material (the plate being of a first material is inherently disclosed in Tamura et al. since it is expected to have the plate of a particular material) adhered to a wiring board (Fig. 5: B), a through-hole extending through the plate and the wiring board (See fig. 5); an optical element (CCD 17 as shown in fig. 5) mounted to the wiring board, the optical element including a light receiving portion; and a lens unit (Fig. 5: 18) mounted to the substrate, the lens unit including a lens (Fig. 5: 39), wherein the light receiving portion and the lens are disposed along an optical axis, the optical axis extending through the through-hole (See fig. 5) (Col. 4, line 43 – col. 5, line 54).

Although Tamura et al. discloses the plate being between the optical element and the substrate and the substrate between the plate and the lens unit, Tamura et al. does not explicitly disclose the wiring board being of a material different form the material of the plate, the wiring board being between the optical element and the plate, that said lens is mounted to the plate, the plate being between the wiring board and the lens unit and that said lens unit includes an optical filter, the lens being between the optical filter and the light receiving portion.

However, Stern et al. teaches an optical system having an optical module (See fig. 7A), the optical module comprising: a substrate (See fig. 7A), the substrate including a plate (Fig. 7A: 701) of a first material (the plate being of a first material is inherently disclosed in Stern et al. since it is expected to have the plate of a particular material) adhered to a wiring board (frame 310 as shown in fig. 7A, which is also electrically connected to a substrate 710, frame 310 acts as a wiring board by supplying electrical connection between the optical element 306 and the substrate 710), a through-hole extending through the plate and the wiring board (See fig. 7A); an optical element (Fig. 7A: 306) mounted to the wiring board, the optical element including a light receiving portion, the wiring board (310) being between the optical element (306) and the plate (701) (See fig. 7A); and a lens unit (Stern et al. teaches a window 302 mounted to the plate but also teaches that a lens can be mounted to the plate; col. 4, lines 36-55) mounted to the plate, the plate being between the wiring board and the lens unit (See fig. 7A), wherein the light receiving portion and the lens are disposed along an optical

axis, the optical axis extending through the through-hole (See fig. 7A) (Col. 3, line 60 – col. 4, line 67; col. 6, lines 5-28).

Therefore, taking the combined teaching of Tamura et al. in view of Stern et al. as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tamura et al. by having the wiring board being between the optical element and the plate, that said lens is mounted to the plate and the plate being between the wiring board. The motivation to do so would have been to provide the optical module with a reference plane, said reference plane of the optical module being aligned with respect to an image plane of the sensor such that the sensor can be mounted in an optical assembly quickly, easily, accurately, and inexpensively as suggested by Stern et al. (Col. 1, lines 35-43).

The combined teaching of Tamura et al. in view of Stern et al. fails to teach that the wiring board being of a material different form the material of the plate and that said lens unit includes an optical filter, the lens being between the optical filter and the light receiving portion.

However, Kawabe et al. teaches an optical system having an optical module (See fig. 1), the optical module comprising: a substrate the substrate including a plate (Fig. 1: 3) of a first material (metal) adhered to a wiring board (Fig. 1: 2), of a material other than the first material, an optical element (CCD 1 as shown in fig. 1) mounted to the wiring board (through the metal plate), the optical element including a light receiving portion; and a lens unit (Fig. 1: 4) mounted to the plate, the lens unit including a lens (Fig. 1: 5), the plate being between the wiring board and the lens unit, wherein the light

receiving portion and the lens are disposed along an optical axis, the optical axis extending through a through-hole (See fig. 1) (See Machine Translation page 3, ¶ 0007-0011; see also page 2, ¶ 0003-0006).

Therefore, taking the combined teaching of Tamura et al. in view of Stern et al. and further in view of Kawabe et al. as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the material of the plate in Tamura et al. and Stern et al. by having a metal plate. The motivation to do so would have been to protect the substrate from any fissure or crack from occurrence to the optical system due to heat generated by the optical unit as suggested by Kawabe et al. (Machine Translation, page 2, ¶ 0006 and page 3, ¶ 0007; see also page 2, ¶ 0003).

The combined teaching of Tamura et al. in view of Stern et al. and further in view of Kawabe et al. fails to teach that said lens unit includes an optical filter, the lens being between the optical filter and the light receiving portion.

However, Beaman teaches an imaging device (See fig. 6) comprising a substrate (Fig. 6: 10) having an image sensor (Fig. 6: 32) mounted to said substrate; a plate (glass 25 in conjunction with lens assembly 40 as shown in fig. 6), a lens unit (see lens system 62 mounted to the plate 25 and lens assembly 40) mounted to said plate; wherein the lens includes an optical filter (blur filter 64 as shown in fig. 6) and a lens (lenses between the filter 64 and the image sensor 32 as shown in fig. 6); wherein the optical axis extends through the optical filter (Col. 2, line 56 – col. 3, line 65).

Therefore, taking the combined teaching of Tamura et al. and Stern et al. in view of Kawabe et al. and further in view of Beaman as a whole, it would have been obvious

to one of ordinary skill in the art at the time the invention was made to modify Tamura et al., Stern et al. and Kawabe et al. by having the lens unit including an optical filter in the optical axis of the optical system and having the lens being between the optical filter and the light receiving portion. The motivation to do so would have been to reduce the overall height of the optical system since the lens unit would not require a large back focus as suggested by Beaman (Col. 3, lines 40-55).

Regarding claim 23, limitations can be found in claim 21.

Regarding claim 28, claim 28 is discussed and analyzed with respect to claim 12. The combined teaching of Tamura et al. and Stern et al. in view of Kawabe et al. and further in view of Beaman teaches the optical system applied to an imaging device (See Tamura et al., video camera 1 as shown in fig. 1; see also Stern et al., col. 3, lines 37-45; Kawabe et al., Machine Translation, page 2, ¶ 0001). Grounds for rejecting claim 12 apply here.

Regarding claim 29, limitations can be found in claim 28.

10. Claims 22 rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al., US Patent 5,130,804, Stern et al., US Patent 6,147,389 and Kawabe et al., JP 7-212633 in view of Beaman, US Patent 5,821,532 and further in view of Campbell, US Patent 7,133,076 B1.

Regarding claim 22, the combined teaching of Tamura et al. and Stern et al. in view of Kawabe et al. and further in view of Beaman teaches that the lens is mounted to

a lens barrel (See Tamura et al., fig. 5: 37; see also Kawabe et al., Fig. 1: 4) but fails to teach the lens barrel being moveable in a direction along the optical axis.

However, Campbell teaches the use of a lens barrel in an imaging module, wherein the lens barrel is extended in a direction along the optical axis with the purpose of performing focusing or to remove the optics (See figs. 2A and 2B; col. 2, line 62 – col. 3, line 46; col. 4, lines 10-58).

Therefore, taking the combined teaching of Tamura et al., Stern et al. and Kawabe et al. in view of Beaman and further in view of Campbell as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical system by having a lens barrel moveable along the optical axis. The motivation to do so would have been to increase the efficiency of the optical system by allowing adjustment of focusing or to remove the optics as suggested by Campbell (Col. 2, line 62 – col. 3, line 46; col. 4, lines 10-58).

11. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al., US Patent 5,130,804, Stern et al., US Patent 6,147,389 and Kawabe et al., JP 7-212633 in view of Beaman, US Patent 5,821,532 and further in view of Mochizuki, US Patent 5,777,335.

Regarding claim 24 the combined teaching of Tamura et al. and Stern et al. in view of Kawabe et al. and further in view of Beaman fails to teach that the optical element includes a shielding layer, the light-receiving portion being between the shielding layer and the lens.

However, Mochizuki discloses a solid photographing apparatus (See figs. 2 and 9), comprising: a photographic element (Fig. 2: 1) having an upper face with a light receiving portion and an opposing lower face; a circuit board (Fig. 1: 7) having a circuit board upper face and a circuit board lower face; said circuit board upper face defines a recessed portion having an inner surface with a light blocking shield (Fig. 2: 30(5)) disposed thereon (See fig. 2, the wiring 11 forms the recessed portion of the circuit board); and said photographing element being mounted in said recessed portion with said lower face being shielded from light passing through said circuit board lower face by said light blocking shield and said photographing element being electrically connected to said circuit board (using wiring shown in fig. 2: 11) (Col. 3, lines 21-51; col. 4, lines 25-40). Having a shielding layer is advantageous because it would help preventing external scattering of radiation to the unwanted locations and the scattering of radiation outside the apparatus, and also, the generation of noises derived from such scattering.

Therefore, taking the combined teaching of Tamura et al., Stern et al. and Kawabe et al. in view of Beaman and further in view of Mochizuki as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical system by having a shielding layer, the light receiving portion being between the shielding layer and the lens. The motivation to do so would have been to improve the optical system efficiency by preventing external scattering of radiation to the unwanted locations and the scattering of radiation outside the apparatus, and also,

the generation of noises derived from such scattering as suggested by Mochizuki (Col. 2, lines 6-10; col. 3, lines 40-47).

Regarding claim 25, the combined teaching Tamura et al., Stern et al. and Kawabe et al. in view of Beaman and further in view of Mochizuki as applied to claim 24 teaches that the shielding layer is a metal layer (See Mochizuki, col. 4, lines 25-40; col. 5, lines 19-23).

12. Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al., US Patent 5,130,804, Stern et al., US Patent 6,147,389, Kawabe et al., JP 7-212633 and Beaman, US Patent 5,821,532 in view of Mochizuki, US Patent 5,777,335 and further in view of Fujieda, US Patent 6,011,860.

Regarding claim 26, the combined teaching of Tamura et al. and Stern et al. in view Kawabe et al. in view of Beaman and further in view of Mochizuki fails to teach that the shielding layer is a resin layer.

However, Fujieda teaches that the use resin for the shielding layer (Fig. 3: 21, note that the hole casing is made with resin for blocking light) is notoriously well known in the art as an alternative for preventing light or radiation to reach the light receiving portion (Fig. 3: 26) (Col. 5, lines 19-40).

Therefore, taking the combined teaching of Tamura et al., Stern et al. and Kawabe et al. in view of Beaman and further in view of Mochizuki and further in view of Fujieda as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical system by having a shielding layer

made with resin. The motivation to do so would have been to improve the optical system efficiency by preventing external scattering of light to the unwanted locations and the scattering of light outside the apparatus, and also, the generation of noises derived from such scattering using a material different from metal as a matter of design choice.

Regarding claim 27, the combined teaching of Tamura et al., Stern et al. and Kawabe et al. in view of Beaman and further in view of Mochizuki and further in view of Fujieda as applied to claim 26 teaches that a portion of the resin layer is in contact with the wiring board (See Mochizuki, figs. 1 and 2, the shielding layer 5 is in contact with the substrate 3).

Conclusion

13. Because new grounds for rejections have been made to unamended independent **claims 12, 19-21, 28 and 29**, this Office Action is made **NON-FINAL**.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson D. Hernandez whose telephone number is (571) 272-7311. The examiner can normally be reached on 8:30 A.M. to 6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava can be reached on (571) 272-7304. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nelson D. Hernandez
Examiner
Art Unit 2622

NDHH
May 17, 2007

VIVEK SRIVASTAVA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600